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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,743	10/30/2003	Won-Woong Choi	SEC.1090	6193

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EXAMINER

ROSASCO, STEPHEN D

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/695,743

Applicant(s)

CHOI, WON-WOONG

Examiner

Stephen Rosasco

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/30/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama (6,400,839) in view of Yui et al. (6,455,211).

The claimed invention is directed to a method of manufacturing the reticles for manufacturing a semiconductor product using a photolithographic process is relatively error free and can be carried out in a short amount of time. The method includes creating a first database, in which data of coordinates, regions and process execution conditions for a plurality of pattern images to be transcribed onto various types of semiconductor products, is classified into respective product groups each containing similar ones of the products, creating a second database of process marks and scribe lane regions corresponding to each of the classified product groups; extracting from the second database data for the process mark and scribe lane region of a reticles for manufacturing the product; determining reference coordinates for the process mark based on reference coordinates of the plurality of pattern images and the selected scribe lane region; and designing and forming a reticle through batch process between the coordinates of the process mark and the reference coordinates of the pattern images.

The applicant discusses the limitations of the prior art in that once the process mark is established, the dimensions of the scribe lane region 18 are established based on the layout of the process mark and on the size of the pattern image.

The process marks for the respective pattern images are then laid out in the scribe lanes 18, for example (ST110). As shown in FIG. 3, this step of laying out a process mark is executed by confirming the location of the mark one by one against a plurality of marks (represented by Cells A, B and C in the figure), and by forming the process mark at that location using layout editing software (ST112). In this process, the reference coordinates are input to the software by a software technician.

A problem is that there may be hundreds or thousands of reference coordinates of the pattern images. Thus, inputting the reference coordinates of a pattern image one by one to lay out the process marks in the scribe lanes 18 of the reticles requires a great amount of time.

And that furthermore, the process mark on the reticle frame of each reticle is manufactured manually by a technician using layout editing software. Not only is this process time-consuming, but the accuracy and a reliability of this process is prone to errors made by the technician. Thus, even more time is spent re-checking the procedure and correcting it when necessary.

Takayama teaches a reticle inspecting apparatus for comparing reference and comparison die patterns of a reticle for producing an integrated circuit which are adjacent to each other, to detect any defect in said patterns, said apparatus comprising: an image pickup optical system (4, 5) for picking up an image of a pattern of a reticle mounted on an XY stage (3) to obtain a picked-up image pattern having first through N-th (N being an integer not smaller than two) frames, first through M-th (M being an integer not smaller than two and not greater than N) image comparators (71-74), a distributor (6) for

distributing the first through the N-th frames of the picked-up image pattern to the first through the M-th image comparators (71-74) one after another, and an inspection controller (1) for converting CAD (Computer Aided Design) data used in drawing the pattern of the reticle into first through N-th intermediate data corresponding to the first through the N-th frames of the picked-up image pattern and for preliminarily transferring the first through the N-th intermediate data to the first through the M-th image comparators (71-74) one after another. The first through the M-th image comparators (71-74) compare the first through the N-th frames of the picked-up image pattern with first through N-th reference images produced from the first through the N-th intermediate data, respectively.

The teachings of Takayama differ from those of the applicant in that the applicant teaches determining reference coordinates for the process mark based on reference coordinates of the plurality of pattern images and the selected scribe lane region; and designing and forming a reticle through batch process between the coordinates of the process mark and the reference coordinates of the pattern images.

Yui et al. a transfer method which uses a transfer mask formed with a plurality of partial transfer patterns and a plurality of alignment marks, and transfers the partial transfer patterns in turn onto a transfer medium, and consequently transfers a pattern obtained by joining the plurality of partial transfer patterns, said method comprising: a measurement step of measuring positions of the alignment marks formed on the transfer mask; a coordinate system determination step of determining an actual coordinate system of a matrix of the plurality of partial transfer patterns formed on the transfer mask on the basis of measurement results in the measurement step; and an alignment step of

sequentially aligning the partial transfer patterns to the transfer medium on the basis of the actual coordinate system determined in the coordinate system determination step.

And further comprising a profile calculation step of calculating profiles that indicate discrepancy levels between design and actual partial transfer patterns in units of partial transfer patterns on the basis of the measurement results in the measurement step, and wherein the alignment step has a correction step of matching each of the actual partial transfer patterns with each of the corresponding design partial transfer patterns by moving the transfer mask on the basis of the calculated profiles every time each of the partial transfer patterns is transferred.

And further comprising a profile calculation step of calculating a profile that represents rotation amounts and/or magnifications between design and actual partial transfer patterns on the basis of the measurement results in the measurement step, and wherein the alignment step has a correction step of matching a plurality of actual partial transfer patterns with a plurality of design partial transfer patterns by moving the transfer mask on basis of the calculated profile.

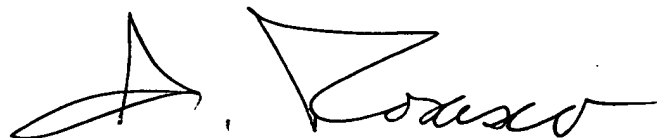
It would have been obvious to one having ordinary skill in the art to take the teachings of Takayama and combine them with the teachings of Yui et al. in order to make the claimed invention because it would be obvious to one in the art to utilize method with design software that groups patterns in a more efficient manner for manufacturing so that the overall process can be more efficient.

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Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Stephen Rosasco whose telephone number is (571) 272-1389. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM. The Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'S. Rosasco', with a stylized, flowing script.

S. Rosasco
Primary Examiner
Art Unit 1756

S. Rosasco
06/17/05